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CASE REPORT/CAS CLINIQUE

Successful treatment with caspofungin of candiduria in a child with Wilms tumor; review of literature

Traitement réussi avec la caspofungine de candidurie chez un enfant atteint d'une tumeur de Wilms ; revue de littérature

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KEYWORDS

Candida urinary tract infection;
Candida albicans;
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Caspofungin

Summary Symptomatic candiduria often occurs in patients with indwelling bladder catheters or immunocompromised host. Isolation of *Candida* in urine in high-risk patients should primarily be considered as a marker for candidemia. Hematological and genitourinary malignancies are one of the main risk factors associated with *Candida* urinary tract infections (CUTI). Fluconazole is a choice for initial treatment of CUTI, but it is fluctuate depending on the patient's condition including renal failure, site of urinary infection and *Candida* species. Poor glomerular filtration is the main disadvantage echinocandins resulting in very low urinary concentrations. Therefore, echinocandins have prohibited their use in CUTI. Up to now, there are only 10 cases reported in the literatures with highly effective echinocandins in CUTI because of high concentrations in the tissue are needed to control invasive fungal disease. Herein, we report a candiduria followed by renal candidiasis caused by *Candida albicans* in a 6-year-old Iranian male with a history of Wilms tumor in left kidney. Direct examination of urine specimen revealed an infection due to budding yeast cells with numerous pseudohyphae and growths of *C. albicans* was reconfirmed by

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MOTS CLÉS

Infection des voies urinaires à *Candida* ;
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sequencing of ITS rDNA region. MICs in increasing order were as follows: caspofungin (0.016 µg/ml), voriconazole (0.125 µg/ml), amphotericin B (0.25 µg/ml), itraconazole (0.5 µg/ml) and fluconazole (2 µg/ml). It seems that successful treatment with caspofungin owes achieved high renal tissue concentrations that are unrelated to glomerular filtration. In conclusion, predisposing factors for better outcome are more important than treatment of CUTI, therefore, management of UTI is essential for critically patients.

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Résumé La candidurie symptomatique se rencontre souvent chez les patients souffrant de cathéters vésiculaires à demeure ou d'un hôte immunocompromis. L'isolement du *Candida* dans l'urine chez les patients à haut risque doit être considéré comme un marqueur de la candidémie. Les tumeurs malignes hématologiques et génito-urinaires sont l'un des principaux facteurs de risque associés aux infections urinaires à *Candida* (CUTI). Le fluconazole est un choix pour le traitement initial de CUTI, mais il varie en fonction de l'état du patient incluant l'insuffisance rénale, le site d'infection urinaire et les espèces de *Candida*. Une mauvaise filtration glomérulaire est le principal inconvénient des échinocandines, ce qui entraîne des concentrations urinaires très faibles. Par conséquent, les échinocandines ont interdit leur utilisation dans CUTI. Jusqu'à présent, il n'existe que 10 cas signalés dans les littératures avec des échinocandines hautement efficaces dans CUTI en raison de concentrations élevées dans le tissu sont nécessaires pour contrôler la maladie fongique invasive. Nous rapportons ici une candidurie suivie d'une candidose rénale provoquée par *Candida albicans* chez un mâle iranien âgé de 6 ans présentant une tumeur de Wilms dans le rein gauche. L'examen direct d'un échantillon d'urine a révélé une infection due à des cellules de levure bourgeonnantes avec de nombreuses pseudo-hyphes et des croissances de *C. albicans* a été reconfirmée par séquençage de la région de l'ADNr de l'ITS. Les MIC en ordre croissant étaient les suivantes : caspofungine (0,016 µg/ml), voriconazole (0,125 µg/ml), amphotéricine B (0,25 µg/ml), itraconazole (0,5 µg/ml) et fluconazole (2 µg/ml). Il semble que le succès du traitement par la caspofungine ait atteint des concentrations élevées de tissus rénaux qui ne sont pas liés à la filtration glomérulaire. En conclusion, les facteurs prédisposants pour un meilleur résultat sont plus importants que le traitement de CUTI, par conséquent, la prise en charge des IU est essentielle pour les patients critiques.

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Introduction

Candiduria in most patients is asymptomatic, and frequently is not predictable without repeating urine cultures and urinalysis. Symptomatic candiduria often occurs in patients with indwelling bladder catheters or immunocompromised host. Therefore, isolation of *Candida* in urine in high-risk patients should primarily be considered as a marker for candidemia [1,2]. *Candida albicans* is the most common agents of CUTI (50–70%), followed by *C. glabrata* (20%), *C. tropicalis* and *C. parapsilosis* [3–7]. Most risk factors associated with CUTI are hematological and genitourinary malignancy, renal transplant recipients, vulvovaginal candidiasis, urinary drainage devices, undergoing urological procedure, use of invasive monitoring devices, antibiotic therapy and uncontrolled diabetes [4]. The definition of urinary tract infection with *Candida* is problematic because there is no diagnostic approach to distinguish colonization from infections [6]. Management of symptomatic candiduria needs further investigation. However, fluconazole, amphotericin B and flucytosine are the effective antifungal agents for symptomatic CUTI [8,9]. Selection of these antifungal agents is limited in patients with renal failure and resistant *Candida* species candiduria. Herein, we present a case of CUTI due to *C. albicans* in a 6-year-old male with bilateral Wilms tumor

and there was no relapse during a five-month follow-up and the patient was successfully cured with caspofungin.

Case presentation

A 6-year-old Iranian male with a history of Wilms tumor (stage I) in left kidney for the last four years followed by chemotherapy for two years was admitted to the department of infectious disease, Mazandaran University of Medical Sciences, Sari, Iran because of high fever, chills, nausea, vomiting, urinary frequency, painful urination, flank and abdominal pain. Due to the recurrent urinary tract infection had antibiotic therapy during six months ago and grade III reflux surgery prior two weeks. Prophylaxis was initiated by cephalexin (25 mg/kg/day) and fluconazole 150 mg (6 mg/kg) daily for 2 weeks, and empiric antibiotic treatment with meropenem (120 mg/kg/day) was initiated for suspected bacterial infection. The fever resolved in a few hours and C-reactive protein (CRP) dramatically reduced. Although blood cultures were negative for bacteria and fungi, broad-spectrum antibiotics and antifungal were continued. He developed fever and plain flank, therefore, fungal infection was strongly considered.

Renal ultrasound imaging showed a mild hydronephrosis, double J stent in bladder and kidney, as well as, hypovascular

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